What is claimed is:

1. A method, comprising:

providing an array assembly including a circuit substrate, several piezoelectric elements each mounted on a first side of the substrate, the elements being spaced apart form each other and arranged in a noncylindrical pattern, and an acoustic backing layer mounted on a second side of the substrate opposite the first side, the backing layer being structured to reduce ultrasonic reflection;

positioning the array assembly along a desired region within a subject's body by movement through a circulatory system of the subject's body; and

while the array assembly is positioned along the desired region, ultrasonically interrogating an internal portion of the subject's body with the array assembly to generate an one or more images corresponding to the internal portion.

2. The method of claim 1, wherein said interrogating includes:

transmitting a plurality of signals between the array assembly and equipment outside the subject's body through cabling coupled to the array assembly and the equipment; and

displaying the one or more images with the equipment.

3. The method of claim 1, wherein the substrate is of a flexible circuit type, the cabling includes 24 or more signal conductors electrically insulated from one another, the conductors are each electrically connected to a different one a corresponding number of signal pads carried on

the substrate, and the elements each being electrically coupled to a different one of the signal pads.

4. The method of claim 1, wherein the array further includes one or more acoustic matching layer members mounted to each of the elements.

5. The method of claim 1, wherein a maximum cross sectional dimension of the array assembly taken perpendicular to a longitudinal centerline of the array assembly is 4 millimeters or less.

6. The method of claim 1, wherein the desired region is inside a heart passageway of the subject's body, the internal portion includes heart tissue, and said interrogating is performed through a side-looking aperture defined by the elements operating in a phased array mode.

7. The method of claim 1, wherein the flexible circuit substrate includes at least two different levels each having an electrically conductive trace pattern and each one the levels is separated from another by an electrically insulating layer.

8. An apparatus, comprising:

an array including a substrate with a number of electrically conductive traces, several piezoelectric elements mounted to a first side of the substrate to each make electrical contact with a different one of the traces, and a backing layer mounted to a second side of the substrate

opposite the first side, the backing layer being comprised of a material selected to broaden element bandwidth and to reduce undesired ultrasonic reflection; and

cabling including several electrical conductors each electrically insulated from one another and each electrically connected to a different one of the electrically conductive traces at a distal end portion of the cabling to correspondingly provide a different electrical signal pathway for each of the elements; and

wherein the array and cabling are structured to place the array at a desired intracardiac site through a circulatory system of a human subject while a proximal end portion of the cabling remains outside the human subject, the array having a maximum cross sectional dimension of 4 millimeters or less taken through the elements and perpendicular to a longitudinal centerline of the array and cabling assembled together.

9. The apparatus of claim 8, further comprising equipment coupled to the cabling, the equipment including one or more processors operable to transmit electrical stimulus signals to the elements through the cable and receive electrical response signals from the elements to generate an image.

10. The apparatus of claim 8, wherein the elements are coplanar and number at least 24.

11. The apparatus of claim 8, wherein the substrate includes at least two different levels of electrically conductive traces, the levels each being separated from another by an electrically insulating layer.

12. The apparatus of claim 8, wherein the elements number at least 24, the substrate is of a flexible circuit type, and the array further includes a plurality of acoustic matching members each mounted to a different one of the elements.

13. A method, comprising:

providing a piezoelectric work piece mounted to a first side of a substrate, the substrate carrying a number of electrically conductive traces;

dividing the piezoelectric work piece into 24 or more elements with each of the elements electrically coupled to a different one of the electrically conductive traces; and

attaching a backing layer to a second side of the substrate, the second side being opposite the first side, the backing layer being operable to reduce undesired acoustic reflection.

14. The method of claim 13, which includes attaching one or more acoustic matching layers to the piezoelectric work piece before said dividing.

15. The method of claim 13, which includes:

masking the piezoelectric work piece and the substrate to expose a surface of the piezoelectric work piece and an electrically conductive pad carried by the substrate; and

depositing an electrically conductive material after said masking to electrically couple the exposed surface of the piezoelectric work piece and the pad before said dividing.

16. The method of claim 13, which includes attaching cabling to the substrate, the cabling including 24 or more conductors each electrically insulated from one another and each electrically connected to a different one of the electrically conductive traces.

17. The method of claim of claim 16, wherein said attaching includes coupling a number of multiconductor flex print cables to corresponding electrically conductive pad sets carried on the substrate with solder.

18. The method of claim 13, wherein the elements number at least 48.

19. The method of claim 13, wherein said dividing is performed with a saw.

20. The method of claim 13, wherein the substrate is of a flexible circuit type and includes at least two different conductive trace levels each separated from another by an electrically insulating layer.

21. An apparatus, comprising: an elongate device having a proximal end portion and a distal end portion and including:

an array of 24 or more piezoelectric elements mounted to a substrate to electrically make contact with a corresponding one of a number of electrically conductive traces carried by the substrate, the array being located along the distal end portion; and

cabling including 24 or more electrical conductors each electrically insulated from one another and each electrically connected to a different one of the electrically conductive traces to

correspondingly define an independently operable electrical signal pathway for each of the elements; and

wherein the device is structured to place the array at a desired intracardiac site through a circulatory system of a human subject while the proximal end portion remains outside the human subject.

22. The apparatus of claim 21, further comprising equipment coupled to the cabling, the equipment including one or more processors operable to transmit electrical stimulus signals to the elements through the cable and receive electrical response signals from the elements to generate an image.

23. The apparatus of claim 21, wherein the elements number at least 48 and the substrate includes at least three different levels of electrically conductive traces, the levels each being separated from another by an electrically insulating layer.

24. The apparatus of claim 21, wherein the substrate is of a flexible circuit type, and the array further includes a plurality of acoustic matching members each mounted to a different one of the elements and a backing layer mounted to a side of the substrate opposite the elements, the backing layer being comprised of a material to reduce acoustic reflection.

25. An apparatus, comprising: an ultrasonic array assembly extending along a longitudinal centerline including:

a substrate having a first side opposite a second side, the substrate carrying a number of electrically conductive traces;

several piezoelectric elements mounted on the first side of the substrate, the elements each making electrical contact with a different one of the traces, the elements being arranged in a noncylindrical pattern; and

wherein a maximum cross sectional dimension of the assembly taken perpendicular the longitudinal centerline is 4 millimeters or less.

26. The apparatus of claim 25, further comprising cabling coupled to the substrate, the cabling including a plurality of electrical conductors each electrically insulated from one another and each electrically connected to a different one of the electrically conductive traces to correspondingly define an independent electrical signal pathway for each of the elements.

27. The apparatus of claim 26, further comprising equipment coupled to the cabling, the equipment including one or more processors operable to transmit electrical stimulus signals to the elements through the cable and receive electrical response signals from the elements to generate an image.

28. The apparatus of claim 25, wherein the elements are coplanar and number at least 24.

29. The apparatus of claim 25, wherein the substrate includes at least two different levels of electrically conductive traces, the levels each being separated from another by an electrically insulating layer.

30. The apparatus of claim 25, wherein the array further includes a plurality of acoustic matching layer members each mounted to a different one of the elements and a backing layer mounted to a side of the substrate opposite the elements, the backing layer being comprised of a material to reduce acoustic reflection.

31. A method, comprising:

providing an array coupled to cabling, the array including a substrate with a first side opposite a second side, several piezoelectric elements each mounted to the first side of the substrate, and a backing layer mounted to the second side of the substrate operable to reduce undesired acoustic reflection;

positioning the array along a desired region within a subject's body by movement through a circulatory system, a proximal portion of the cabling being positioned outside the subject's body while the array assembly is positioned along the desired region; and

ultrasonically interrogating an internal portion of the subject's body with the array along the desired region to generate one or more images corresponding to the internal portion.

32. The method of claim 31, wherein said interrogating includes:

transmitting a plurality of signals between the array assembly and equipment coupled to the proximal portion of the cabling outside the subject's body; and

displaying the one or more images as a function of the signals.

33. The method of claim 31, wherein the substrate is of flexible circuit type, the cabling includes 24 or more signal conductors electrically insulated from one another, the conductors are each electrically connected to a different one a corresponding number of signal pads carried on the substrate, and the elements each being electrically coupled to a different one of the signal pads.

34. The method of claim 31, wherein the elements number 24 or more and the elements are coplanar.

35. The method of claim 31, wherein the elements are arranged in a noncylindrical pattern.

36. The method of claim 35, wherein a maximum cross sectional dimension of the array assembly taken perpendicular to a longitudinal centerline of the array assembly is 3 millimeters or less.

37. The method of claim 31, wherein the desired region is inside a heart passageway of the subject's body, the internal portion includes heart tissue, and said interrogating is performed through a side-looking aperture defined by the elements, the elements being arranged in a noncylindrical shape.

38. The method of claim 31, wherein the flexible circuit substrate includes at least two different levels each having an electrically conductive trace pattern, each one the levels is

separated from another by an electrically insulating layer, and the cabling includes a number of multiple conductor flex print cables connected to the substrate.

39. The method of claim 31, wherein the assembly includes several acoustic matching members each mounted to a different one of the elements.

40. The method of claim 39, wherein the acoustic matching members each include at least two layers of different acoustic impedance to provide a desired acoustic stack in cooperation with the backing layer relative to each of the elements.

41. A method, comprising:

providing an array of at least 24 piezoelectric elements mounted to a substrate to electrically contact a corresponding one of a number of electrically conductive traces carried by the substrate, and cabling with a distal end portion coupled to the array;

positioning the array at a desired site within a subject's body by movement through a circulatory system;

transmitting a plurality of electric stimulus signals to the array at the desired site through a proximal end portion of the cabling outside the subject's body; and

generating ultrasonic energy with each of the elements in response to the electric stimulus signals, the cabling including 24 or more signal conductors electrically insulated from one another, the signal conductors each being electrically connected to a different one of the conductive traces.

42. The method of claim 41, which includes:

providing the electric stimulus signals with equipment coupled to the proximal end portion of the cabling;

detecting ultrasound with one or more of the elements to return a corresponding number of electric response signals to the equipment; and

generating one or more images with the equipment as a function of the stimulus signals and the response signals.

43. The method of claim 41, which includes performing medical treatment with the array.

44. The method of claim 41, wherein the desired location is inside a passageway of a heart the subject's body, and which includes imaging one or more regions of the heart with the device and the equipment.

45. The method of claim 44, wherein the stimulus signals are provided in frequency range of about 3-15 megahertz and a maximum cross section dimension of the array taken perpendicular to a longitudinal centerline is 4 millimeters.

46. The method of claim 41, wherein the substrate is of a flexible circuit type and the cabling includes a number of multiple conductor flex print cables, and the elements number at least 48.

47. The method of claim 41, wherein the array includes several acoustic matching members each mounted to a different one of the elements and a backing layer mounted on a side of the

substrate opposite the elements, the backing layer being operable to reduce undesired acoustic reflection.

48. The method of claim 47, wherein the acoustic matching members each include at least two layers of different acoustic impedance, the elements are arranged to be generally coplanar with one another.